Molding technology for Duracon

Safety and Hygiene Precaution | Injection Molding Machines | Molding Conditions | Recycling | Molding Characteristics | Products Design | Mold Design | **Preventive Measures for Molding Defects**

8 Measures for Preventing Molding Defects

Table 8-1 Causes of and measures against molding defects (1)

Defect phenomenon	Causes	Measures
(1) Flow mark	(1)Residual jetting pattern on the surface generated when the resin passes through the gate	Primary measure : Prevent jetting. (1)Make initial running rate at the gate slow. (2)Enlarge the gate. (3)Change the resin to a higher flow grade. (4)Elevate resin temperature.
		Secondary measure : Prevent jetting pattern if jetting is generated. (5)Elevate the mold temperature. Increase holding pressure. (6)After the gate position (Make straight length short after resin passes through the gate). a) After the gate position to the section where flow comes in contact with the core. b) Move the gate position to a thin wall section. c) Use a tub gate.
	(2)Residual flow pattern on the surface due to flow rate change, generated when the resin passes corner sections or sections of nonuniform wall thickness (this wall ⇔ thick wall)	(1)Make comers rounded. (2)Make sections where wall thickness changes gently inclined and rounded.
	(3)Insufficient degassing	(1) Enlarge the gas vent.
(2)Pit marks, wrinkles	(1)Insufficient adhesion of resin to cavity due to lack of inner pressure in cavity.	(1) Increase the holding pressure and hold time. (2) Enlarge runners and gates. (3) Raise mold temperature. Raise material temperature. (4) Increase injection speed.
	(2)Insufficient degassing	(1) Enlarge the gas vent. (2) Do not elevate resin temperature too high. (3) Dry the material sufficiently.
(3) Weld mark	(1)Insufficient melting adhesion of flow front	(1) Raise the mold temperature (buried cartridge heaters in weld sections). (2) Increase injection speed. (3) Change the resin to a higher flow grade. (4) Enlarge the gas vent in welds. (5) Provide weld escape. (6) Change flow pattern into welds by adjustment of thickness.
	(1)Volatile components such as moisture and decomposed gas and air entrapped in plasticization.	(1) Dry the material sufficiently (100℃ or higher) (2) Do not raise the resin temperature to high.

(4) Silver mark	(2)Air pocket occurrence by unbalanced flow in cavity.	(3) Increase screw back pressure. (4) Enlarge gas vent. (5) Degas from runners.
	(3)Contamination of foreign materials such as PE,PP.	(1)Purge sufficiently from the cylinder.

Table 8-1 Causes of and measures against molding defects (2)

Defect phenomenon	Causes	Measures
(5) Sink mark	(1) Surface sink with shrinkage of inner part due to insufficient cooling of thick wall and rib section and insufficient inner pressure in the cavity.	(1) Lower the mold temperature. (2) Enlarge sprue, runners, and gates. (3) Raise holding pressure. Prolong holding time. (4) Keep cushion amount of material until gate seal. (5) Minimize the rib thickness to approximately one-third of the base thickness. (6) Decrease the thickness of thick wall sections.
(6) Surface delamination	(1) Contamination of foreign materials such as PE,PP.	(1) Sufficiently purge the material from the cylinder.
	(2) Shear delamination	(1) Raise the mold temperature. (2) Lower the injection speed. (3) Enlarge gates.
	(3) Separation of oil from oil filled grades	(1) Decrease initial gate passing speed. (2) Prevent air trapping by poor feeding through screw during plasticization (control of cylinder temperature)
(7) Surface roughness	(1) Mold deposit	(1) Measures against mold deposit a) Sufficiently dry the material (100℃ or higher). b) Do not raise material temperature too high. c) Enlarge gas vent. d) Raise mold temperature. (2) Cleaning cavities a) Ultrasonic cleaning of core in a solvent.
	(2) Insufficient adhesion to cavity	(1) Raise mold temperature. Increase injection speed. (2) Increase holding pressure. Extend holding time. (3) Enlarge sprue, gates, runners. (4) Enlarge gas vent grooves.
(8) Vacuum void	(1) Inner molten resin is pulled to surface due to fast solidification of surface layer, then voids are occurred in inner section.	(1) Locate the gate at the thickest section of molding. (2) Enlarge gate, runner, sprue, and nozzle in an accordance with thickness of molding. Increase gate thickness to more than 50%-60% of wall thickness of molding. (3) Increase holding pressure. Prolong holding time. Keep cushion until gate seal. (4) Ensure working of non-return valve does not cause back flow during holding time. (5) Decrease injection speed. (6) Change the material to high viscosity grade.

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